



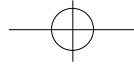
## Federal Communications Commission Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures :

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

*Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.*

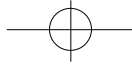




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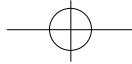
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# 1. Introduction

## Overview

CB647M-LX/EX motherboard integrates the latest advances in processor, memory, and I/O technologies into a micro ATX form factor(244 x 190mm) that combines performance, flexibility, and easy of use into high integrated capable of meeting a variety of price/performance levels.

CB647M-LX/EX motherboard supports Intel Pentium II processor or celeron processor based on the Intel 440LX/EX PCIssets(82443LX/EX and 82371EB). Two standard 168-pin DIMM Sockets with memory size up to 256MB support EDO and Synchronous DRAM memory.

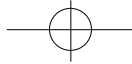
The Intel 82371EB PCI-to-ISA/IDE Xcelerator(PIIX4) provides an integrated Bus Master IDE controller and Ultra DMA/33 with high performance IDE interfaces for up to four devices.

In addition, the CB647M-LX/EX comes with an AGP(Accelerated Graphics Port) bus slot, a faster than the current 33MHz PCI bus. The AGP bus provides a direct connection between graphics subsystem and system memory.

**Caution :**

*There is the danger of an explosion if the battery is incorrectly replaced. Replace the battery with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the battery manufacturer 's instructions.*





## Main Features

### 1. Processor :

- Single Intel Slot 1 connector
- Support to Intel Pentium II - 233/266/300/333 MHz processor
- Support to Intel celeron 266/300/300A/333MHz processor
- Integrated Voltage Regulator Module

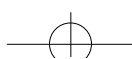
### 2. Chipsets :

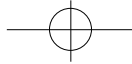
#### 2-1. 82443LX/EX PCI/AGP Controller

- Processor interface control
  - Processor host bus speed up to 66MHz
- Integrated DRAM controller
  - Support for EDO or Synchronous DRAM(SDRAM)
  - Support for 4-, 16-, 64-Mbit DRAM devices
- Accelerated Graphics Port interface
- Fully-synchronous PCI bus interface
- Data Buffering
  - Host-to-DRAM, PCI-to-DRAM, and AGP-to-DRAM write-data buffering

#### 2-2. 82371EB PCI ISA IDE Xcelerator(PIIX4)

- Multifunction PCI-to-ISA bridge
- USB controller
  - Two USB ports
  - Support for UHCI design guide revision 1.1 interface
- Integrated Dual-channel enhanced IDE interface
  - Support for up to four IDE devices
  - Support for PIO Mode 4 transfer(up to 16MB/s) and Ultra DMA/33 synchronous DMA mode transfer(up to 33MB/s)
- Enhanced DMA controller
- Interrupt controller based on 82C59
- Power management logic



**Real-Time Clock****16-bit counters/timers based 82C54****2-3. ITE 8671F Super I/O Controller****Serial ports : Two 16550 compatible UARTs****Parallel port : Standard / EPP / ECP mode support****Floppy disk controller****Keyboard and Mouse controller****Support an IrDA and Consumer IR-compliant infrared interface****Support Keyboard Power ON & Password Function****2-4. Trident 4DWAVE-DX Audio Controller****Advance PCI DirectSound Accelerator****High Quality Wavetable Synthesizer****Full Legacy and DOS Games Compatibility****High Quality Audio and AC97 Support****Advanced Streaming Architecture****Microsoft DirectSound, DirectSound 3D Support****2-5. WINBOND W83781D Hardware Monitoring(option)****3 Thermal inputs from remote thermistors****5 Positive voltage inputs(+12V, +5V, +3.3V, VcoreA, VcoreB)****2 OP amps for negative voltage monitoring(-12V, -5V)****3 Fan speed monitoring inputs****WATCHDOG comparison of all monitored values****Programmable hysteresis and setting points for all monitored items****3. System BIOS :****Award flash BIOS(4.51PG)****4. DIMM Memory Socket :****Provide 2 pieces of 168-pin DIMM socket.****Support to 8/16/32/64/128 MB unbuffered EDO or Synchronous DRAM (SDRAM) Module.****Support the single-or double-sided DIMMs.**

**5. Expansion Slots :**

Two 16-bit ISA slots with 100% ISA compatible function.(1 shared)

Two 32-bit PCI slots all support PCI master.

PCI specification version 2.2.

One 32-bit A.G.P slot support up to 528MB/s transfer rate

A.G.P specification revision 2.0.

Synchronous coupling to the host bus frequency.

**6. PS/2 Keyboard and PS/2 Mouse Set :**

PS/2 keyboard & PS/2 mouse connector are located on the back panel.

The 5V lines to these connectors are protected with a Fuse circuit.

**7. Serial / Parallel Ports :**

One multi-mode parallel port with chip-protect circuitry supports standard, enhanced (EPP), high speed(ECP) mode(25-pin D-Sub).

Two high speed 16C550 UART compatible buffer fast serial port(9-pin D-Sub).

**8. IDE Support :**

Provide two independent bus-mastering PCI IDE interfaces(Primary and Secondary IDE).

Support PIO Mode 4 transfer(up to 16MB/s) and Ultra DMA/33 synchronous-DMA mode transfers(up to 33MB/s).

The BIOS automatically detects the IDE device transfer rate and translation mode.

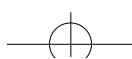
**9. FDD Support :**

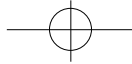
Provides 34-pin box header.

Supports 360K/720K/1.2M/1.44M/2.88M floppy drives.

**10. Power Supply Connector :**

Provedes the connector for Micro ATX PC power supply(20 pin).



**11. USB Connector :**

Provide the 2 channel USB port.

Fully supports Universal Host Controller Interface(UHCI) and uses UHCI-compatible software drivers.

The 5V lines to these connectors are protected with a poly switch circuit, that, like a self-healing fuse, reestablishes the connection after over-current condition is removed.

**12. RTC & Back-up Battery :**

Integrated into PIIX4(82371EB) chipset.

An external coin-cell battery powers the real-time clock and CMOS memory. When the computer is not plugged into a wall socket, the battery has an established life of three years. When the computer is plugged in, the 3.3V standby current from the power supply extends the life of the battery.

**13. Keyboard Controller :**

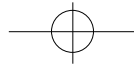
It's function compatible with Intel 8042 Keyboard Controller, which provides enhanced gate A20 switching & PS/2 compatible mouse.

AMI keyboard BIOS

Integrated into Super I/O Controller.







### Motherboard Layout

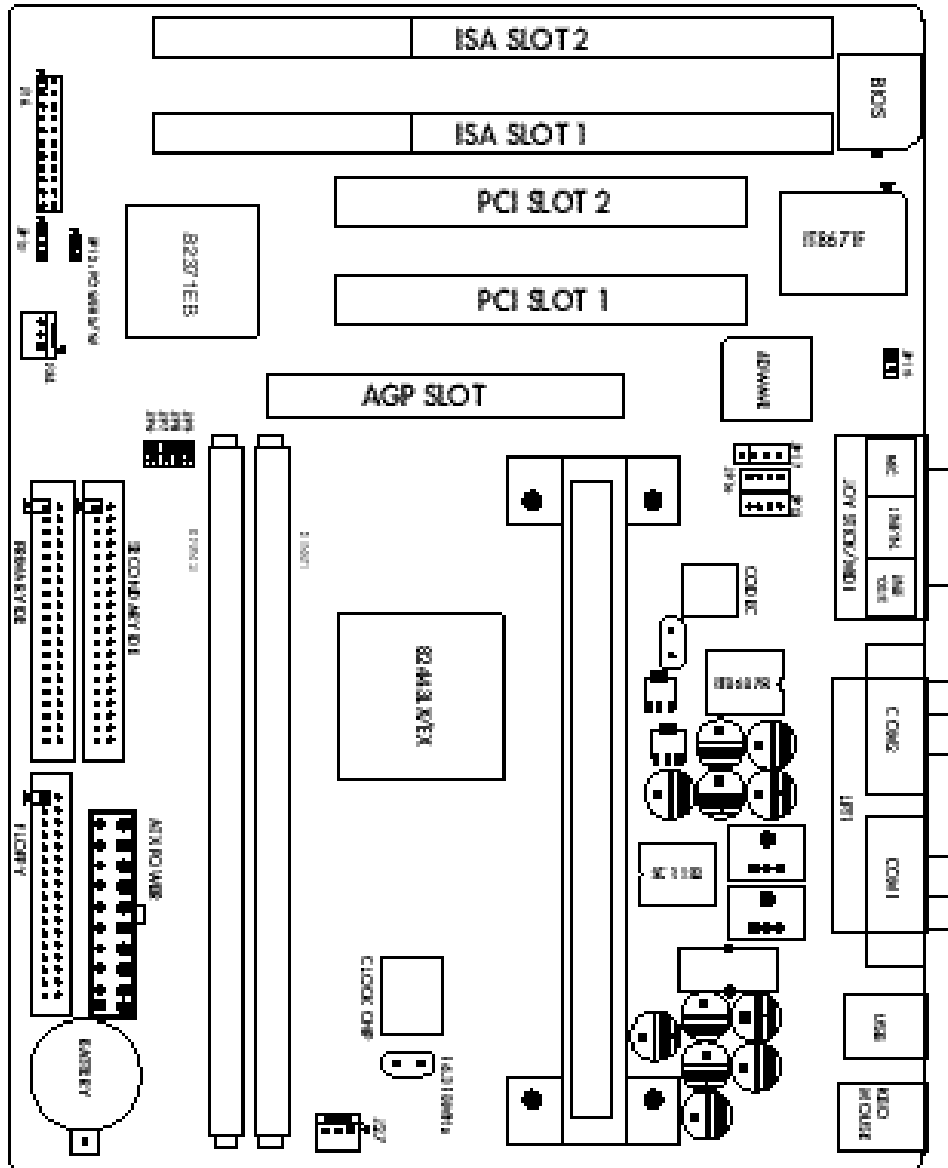


Figure 1-1. CB647M-LX/EX Motherboard Layout

